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TITLE: Sonora: A New Generation Model Atmosphere Grid for Brown Dwarfs and Young Extrasolar Giant Planets

Abstract (2,250 Maximum Characters): Brown dwarf and giant planet atmospheric structure and composition has been studied both by forward models and, increasingly so, by retrieval methods. While indisputably informative, retrieval methods are of greatest value when judged in the context of grid model predictions. Meanwhile retrieval models can test the assumptions inherent in the forward modeling procedure.

In order to provide a new, systematic survey of brown dwarf atmospheric structure, emergent spectra, and evolution, we have constructed a new grid of brown dwarf model atmospheres. We ultimately aim for our grid to span substantial ranges of atmospheric metallicity, C/O ratios, cloud properties, atmospheric mixing, and other parameters. Spectra predicted by our modeling grid can be compared to both observations and retrieval results to aid in the interpretation and planning of future telescopic observations.

We thus present Sonora, a new generation of substellar atmosphere models, appropriate for application to studies of L, T, and Y-type brown dwarfs and young extrasolar giant planets. The models describe the expected temperature-pressure profile and emergent spectra of an atmosphere in radiative-convective equilibrium for ranges of effective temperatures and gravities encompassing $200 \leq T_{\text{eff}} \leq 2400$ K and $2.5 \leq \log g \leq 5.5$. In our poster we briefly describe our modeling methodology, enumerate various updates since our group's previous models, and present our initial tranche of models for cloudless, solar metallicity, and solar carbon-to-oxygen ratio, chemical equilibrium atmospheres. These models will be available online and will be updated as opacities and cloud modeling methods continue to improve.

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